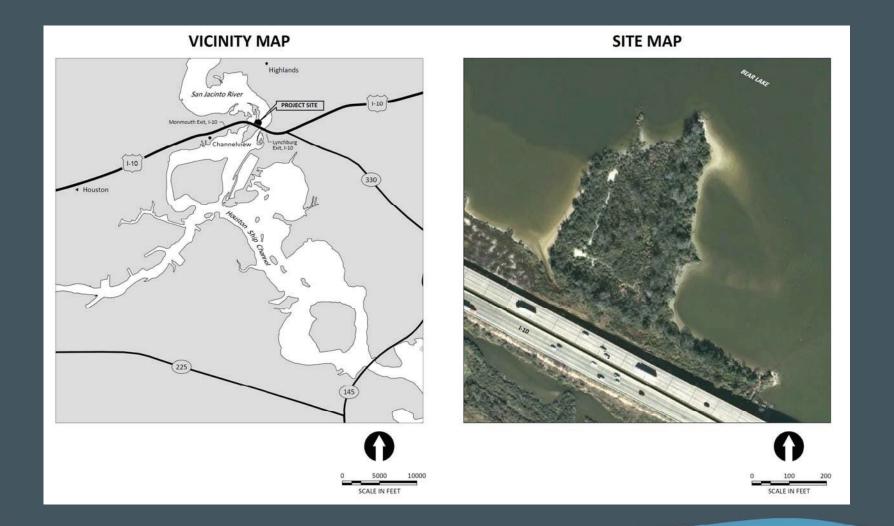


San Jacinto River Waste Pits Superfund Site Time Critical Removal Action (TCRA) Update

July 20, 2011



Location





Site History

- Impoundment, built in the mid-1960s for disposal of paper mill wastes
- Impoundment

 (about 14.7 acres)
 is north of the I-10

 Bridge





Site History (continued)

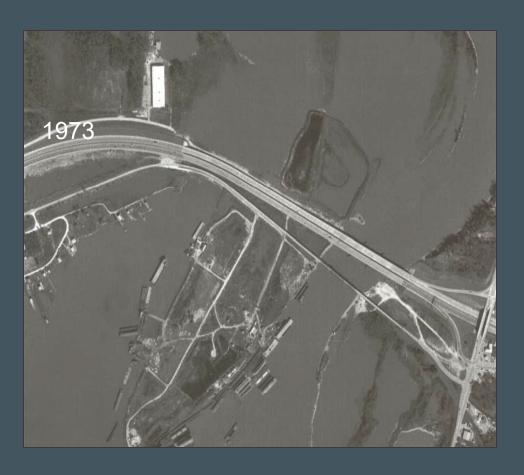
 Activities at the impoundments were overseen by the Texas State Department of Health in the 1960's





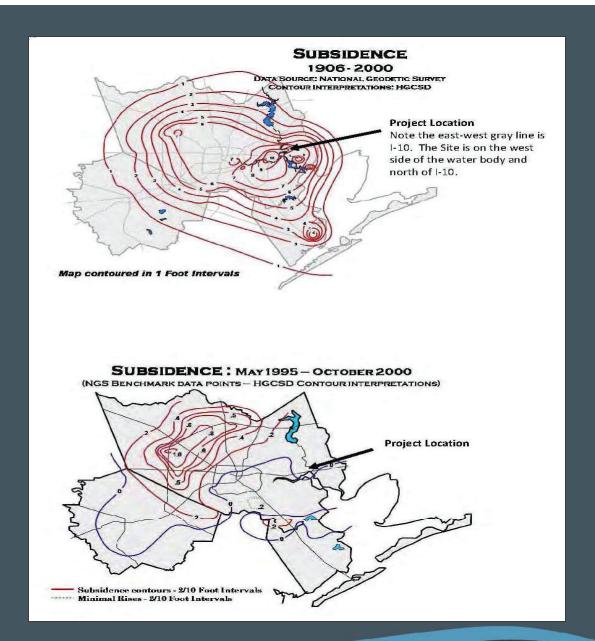
Site History (continued)

 After construction, the impoundments were affected by subsidence and dredging activities





Area Subsidence History



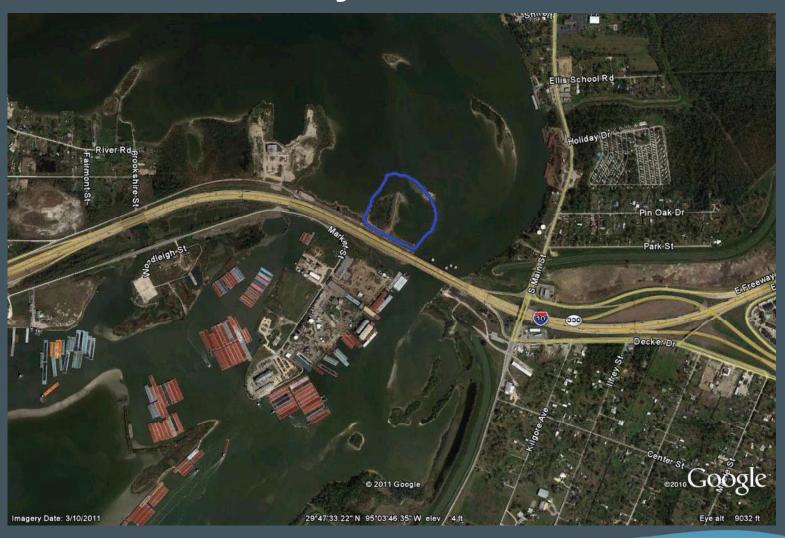


January, 2002



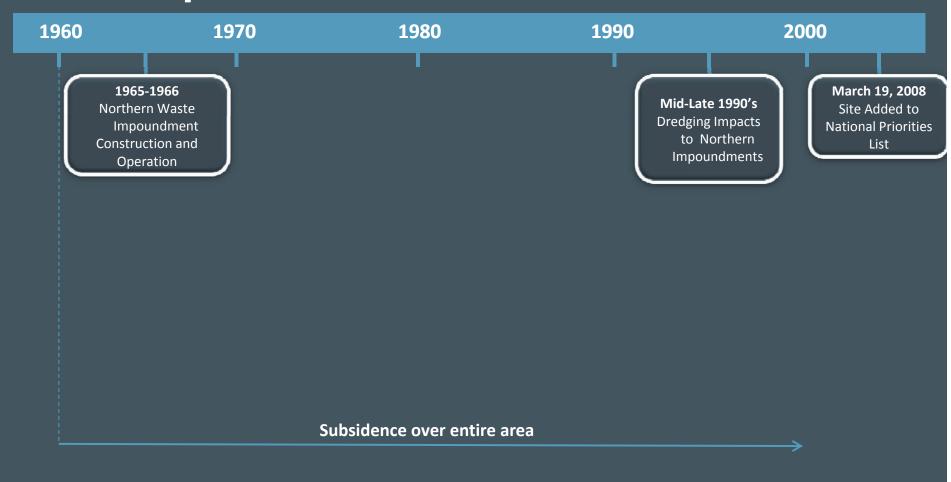


May, 2011



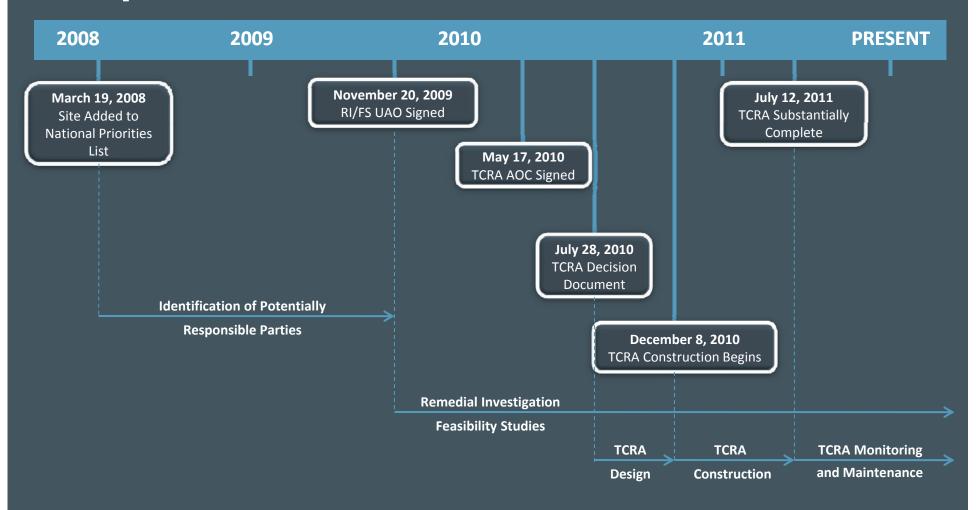


Pre-Superfund Milestones





Superfund Timeline and Activities





Time Critical Action Objectives

- Stabilize/seal source materials within the original 1966 north impoundment footprint
- Cap/seal should withstand forces generated by the river in a 100 year flood event
- Cap/seal should prevent direct human and benthic contact with the waste materials
- Action should be consistent with potential long-term remediation strategies that could be developed for the Site



Time Critical Removal Action Construction Elements

- Area Fencing
- Signs
- Clearing and Site Preparation
 - TxDOT right-of-way improvements
 - Clearing impoundments
 - Off-site stockpile and loading area preparation
- Waterside placement of geotextile and protective capping materials
- Landside placement of geotextile, geomembrane and protective capping materials



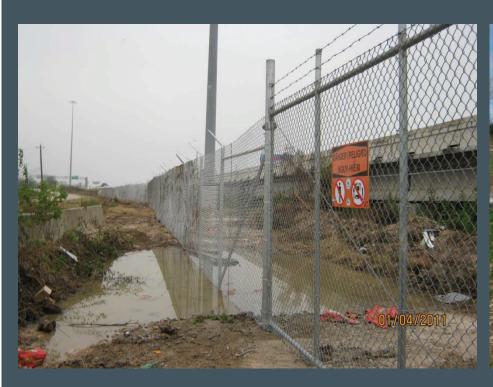
Fencing and Access





Fencing

Completed Fence Installation South of I-10 Southwest Corner of Big Star Property Fence Installation







Access Road

Before

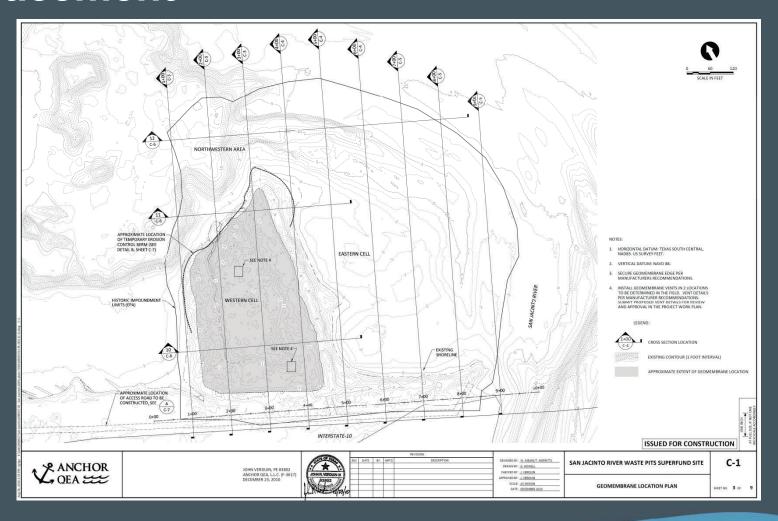
After





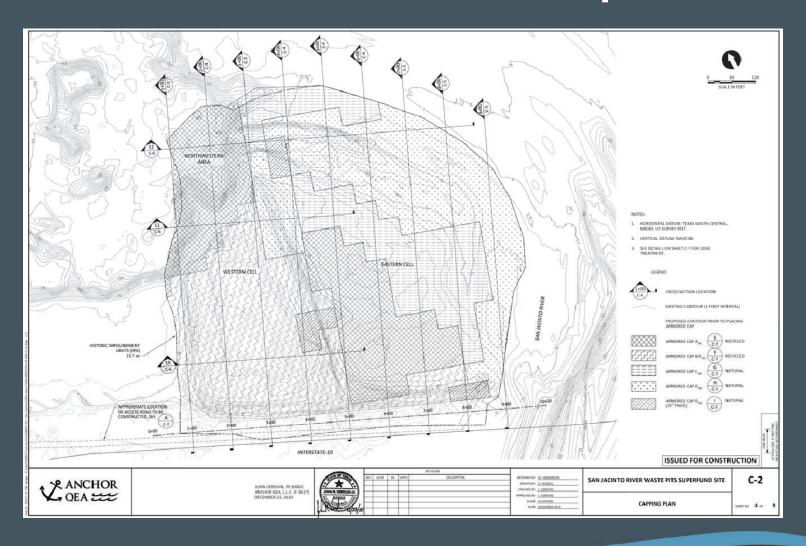


Construction Plans- Geomembrane Placement



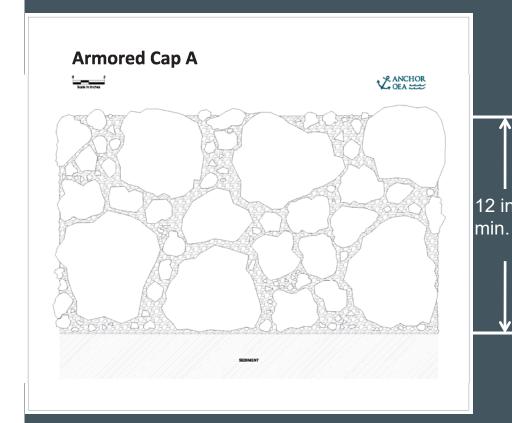


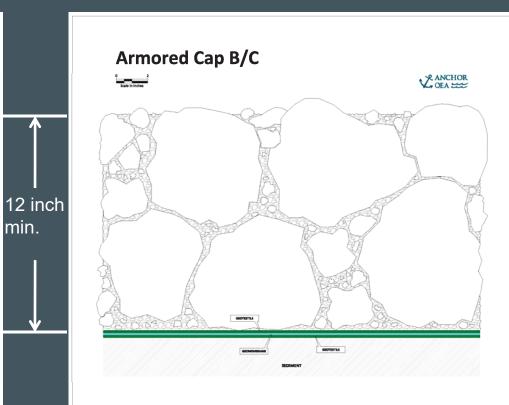
Construction Plans - Armor Cap Areas





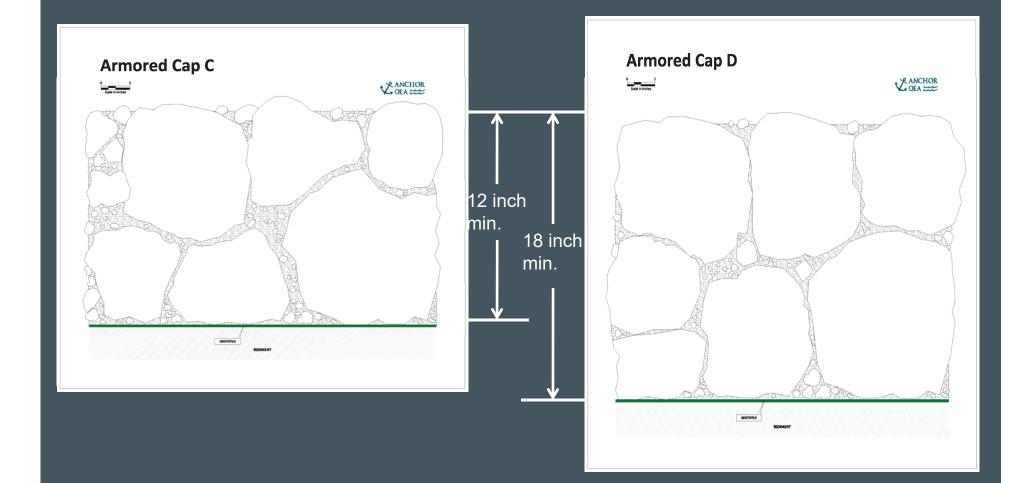
Armor Cap Types A and B/C





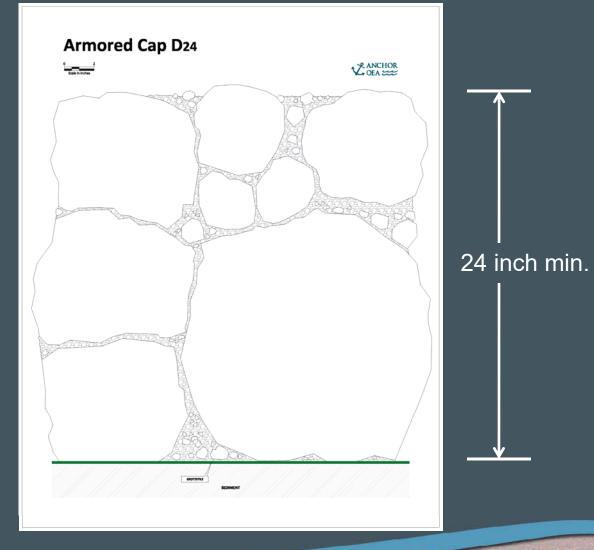


Armor Cap Types C and D





Armor Cap Type D-24





Materials Stockpiling

Delivery of Armor Cap D Material Managing Armor Cap D Material







Barge Mobilization

Installation of Bow Sections on Transport Barge

Installation of Steel Rail on Starboard Side of Barge







Waterside Armor Cap Placement

Placement of Armor Cap D Material on Eastern Cell Placement of Armor Cap D and Geotextile Material on Eastern Cell







Western Cell Construction

Waste Stabilization

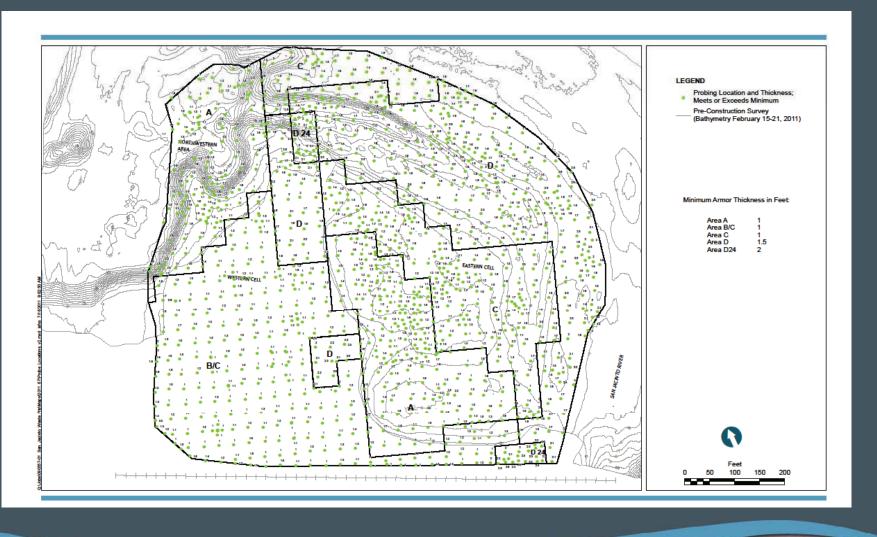
Geotextile, Geomembrane and Rock Placement







Construction Verification





Completed Cap (July 14, 2011)





Monitoring & Maintenance

- Monitoring Frequency
 - Routine Schedule
 - Quarterly for two years
 - Semi-Annually years 3 5
 - Annually thereafter
 - Following a significant flow event
- Monitoring Procedures
 - Bathymetric Survey
 - Manual Probing of Areas Identified by Bathymetry
- Contingency Planning
 - Concrete Available Locally
 - Maintaining a 1,600-Ton Rock Stockpile Locally



Long-term TCRA Options

- Removal, disposal, and treatment
- Cap Enhancement
 - Additional structural enhancements
 - Habitat enhancements
- Some combination of the options above





Remedial Investigation/Feasibility Study



What is a Remedial Investigation

• It is used in Superfund to determine the nature and extent of chemicals of concern, and determines if there are areas that pose an unacceptable risk to humans, or the environment



What is a Feasibility Study

 It is an engineering evaluation that looks at ways of cleaning up areas that are identified as posing unacceptable risks to humans or the environment



South Impoundment History

- Another impoundment south of I-10 was briefly used prior to the northern impoundment
- Activities there were also overseen by the Texas State Department of Health in the 1960's





South Impoundment History (continued)

- After construction, the south impoundment was filled with construction and other materials
- This area is also being evaluated in the ongoing remedial investigation





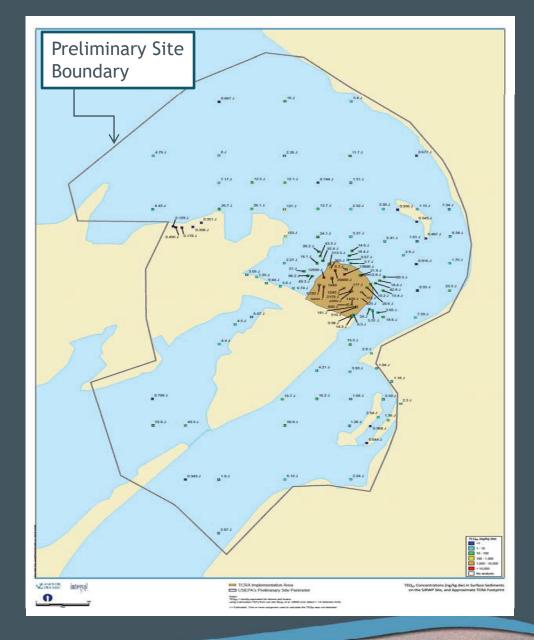
Remedial Investigation/Feasibility Study

Data Overview

- Sediments
- Dioxin sources
- Soil
- Groundwater
- Tissue

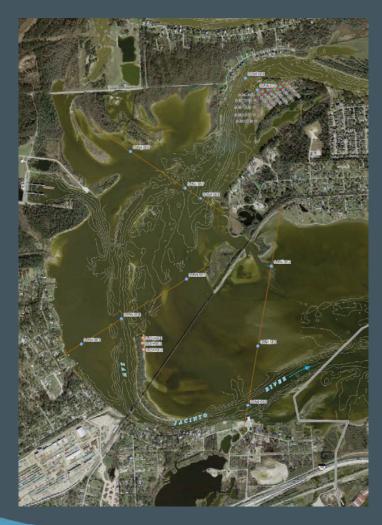


Surface Sediment Dioxin Concentrations Within the Preliminary Site Boundary





Upstream Dioxin Concentrations







Dioxin Sources – General Urban Background

- Atmospheric deposition from trash burning, diesel exhaust, manufacturing, etc.
- Wastewater Outfalls
- Stormwater Runoff



Dioxin Sources – San Jacinto River

- Upstream
 - Observed surface concentrations range from 0.11 to 5.72 ng/kg TEQ
 - Wastewater outfalls
 - Stormwater discharges
 - Upstream chemical plants
 - 1994 San Jacinto Pipeline Fire residuals

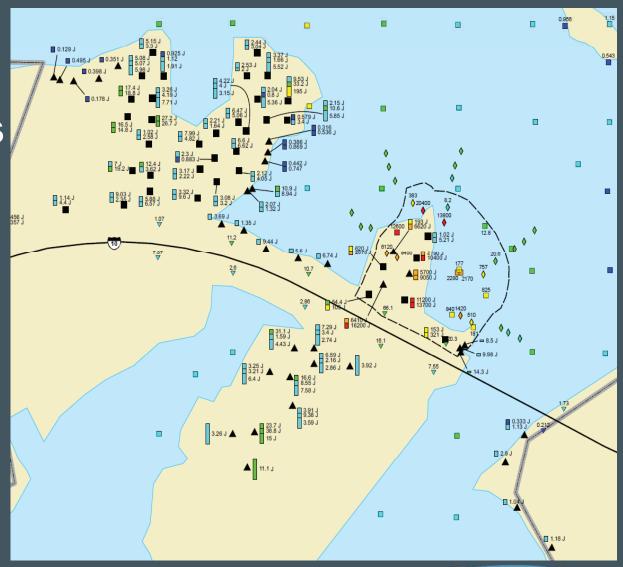


Dioxin Sources – San Jacinto River (continued)

- Preliminary Site Boundary
 - Waste Impoundments observed surface
 concentrations from 8.5 20,400 ng/kg TEQ
 - Permitted wastewater outfalls (seven)
 - Stormwater outfalls
 - Atmospheric deposition

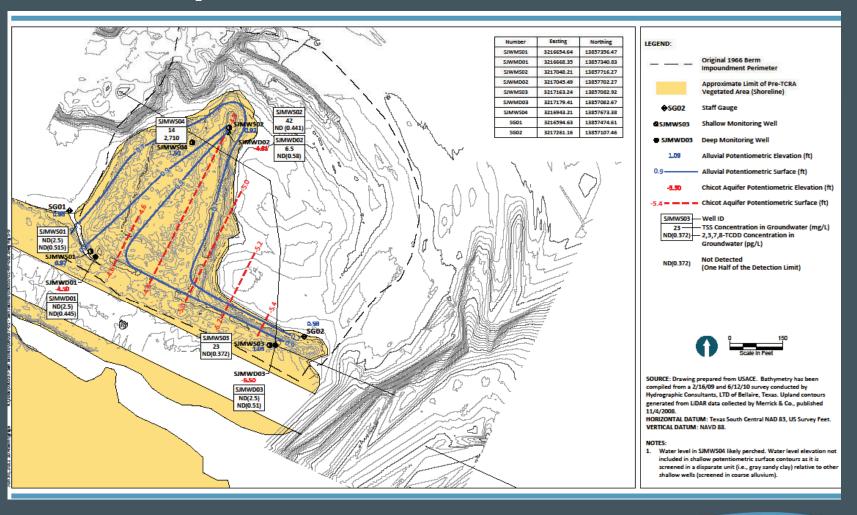


Surface Soil Dioxin Concentrations



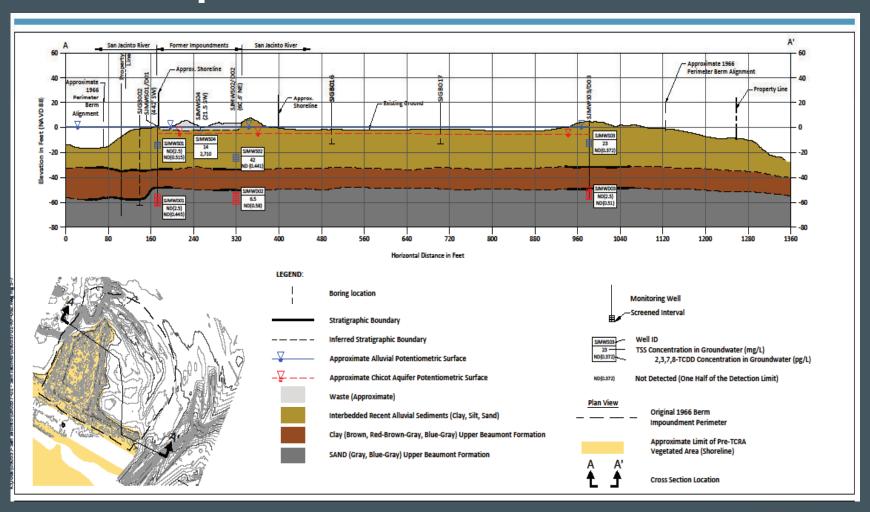


Groundwater Dioxin Concentrations – North Impoundment





Groundwater Cross-Section – North Impoundment





Future RI/FS Activities

- Fate and Transport Field Studies
- Exposure Assessment
- Toxicological and Epidemiological Studies
- Baseline Human Health Risk Assessment
- Baseline Ecological Risk Assessment
- Treatability Studies
- Remedial Investigation Report
- Remedial Alternatives Evaluation
- Feasibility Study
- Risk assessments due in mid-2012

